

DEPARTMENT OF ENVIRONMENT AND CONSERVATION DIVISION OF AIR POLLUTION CONTROL William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243 Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

APC 100

NON-TITLE V PERMIT APPLICATION FACILITY IDENTIFICATION

Тур	oe or print and su	ıbmit. Atta	ich appropriate s	ource descript	tion forms.]			
		SITE	INFORMATION						
1. Organization's lega	l name and SOS	control n	umber [as regist	ered with the ⁻	TN Secretary of State (SOS)]	1			
Sterilization Services of T	ennessee - SOS#	029-949							
2. Site name (if differe	nt from legal nan	ne)]			
Sterilization Services of T	ennessee - Plant	2							
3. Is a construction pe (see instructions for			g submitted?	Yes	No JUN26	12:3284			
4. Site address (St./Rd./Hwy.) County name									
4140 B. F. Goodrich Boule	evard, Suite 200			Shelby					
City			Zip code		5. NAICS or SIC code				
Memphis			38118						
6. Site location	Latitude			Longitude					
(in lat. /long.)	nin, 09 sec								
	CONTACT	INFORMA	TION (RESPONS	IBLE PERSON)					
7. Responsible person	/Authorized con	tact	Phone num	iber with area code					
Timothy Connor				804-929-542	804-929-5422				
Mailing address (St./	/Rd./Hwy.)			Fax number	r with area code				
5674 Eastport Blvd				804-236-249					
City		State	Zip code	Email addre	255				
Richmond		VA	23231	dconnor@st	erilization-services.com				
	CON	TACT INFO	RMATION (TECH	HNICAL)					
8. Principal technical o	ontact			Phone num	ber with area code				
Steven Siler				847-420-405	54 (mobile)				
Mailing address (St./	Rd./Hwy.)			Fax number	with area code				
350 Barclay Blvd				847-634-262	27				
City		State	Zip code	Email addre	PSS				
Lincolnshire		IL.	60069	ssiler@altair	corp.net				
	CON	TACT INF	ORMATION (BIL						
9. Billing contact			•		ber with area code				
Gaary Tracy				847-634-954	0 extension 104				
Mailing address (St./	Rd./Hwy.)	V 1		Fax number	with area code				
350 Barclay Blvd	<u> </u>			847-634-262	· · · · · · · · · · · · · · · · · · ·				
City		State	Zip code	Email addre	SS				
_incolnshire		1L	60069	gtracv@altair	rcorn.net				

APC 100

				IFORMATION		
process emissi and include a l	f air contaminant sourd on sources, fuel burning Jnique Source ID for each fies the air contaminant r more details)	installations, h source.Th	, and incine e Unique So	rators that are contain ource ID is a name/nu	ned in this application mber/letter, which	
	Ethylene Oxide Gas Steril Block Diagram with Ethyl			tion		
CH1 - Sterilization Cl CH2 - Sterilization Cl CH3 - Sterilization Cl CH4 - Sterilization Cl CH5 - Sterilization Cl	namber 2 namber 3 namber 4					
AR1 - Aeration Room AR2 - Aeration Room AR3 - Aeration Room AR4 - Aeration Room	1 2 ⁻ 1 3					
addressed. Yes	minant source(s) in a no	onattainme	nt area? If	"Yes", then minor so	ource BACT must be	
12. Normal operation:	Hours/Day 24	Days/Week 7		Weeks/Year 50	Days/Year 350	
13. Percent annual throughput	Dec. – Feb. 25	March – Ma 25	- 1	June – August 25	Sept. – Nov. 25	
	TYPE OF PERMIT	REQUESTE	D (check ar	and the second		
14. Operating permit	9 ;			Date of ownership change (if applicable)		
perint	Date construction star	1	completed		change (if applicable)	
	Last permit number(s)	ted Date	completed			
Construction permit		ted Date	completed Emissic	Date of ownership	lumber(s)	
Construction permit	Last permit number(s) Last permit number(s)	ted Date	Emissio Emissio	Date of ownership on Source Reference N on Source Reference N	lumber(s) lumber(s)	
Construction ✓ permit ✓	Last permit number(s) Last permit number(s) Last permit number(s)	ted Date	Emission Emission	Date of ownership on Source Reference N on Source Reference N struction, Modification	lumber(s) lumber(s)	
Construction permit If you chose Construction St	Last permit number(s) Last permit number(s) Ction permit above, then arting date	ted Date	Emission Emi	Date of ownership on Source Reference N on Source Reference N struction, Modification n date	lumber(s) lumber(s)	
Construction permit If you chose Construction St	Last permit number(s) Last permit number(s) Last permit number(s)	choose eithe	Emission Emission Emission Emission Emission En New Const	Date of ownership on Source Reference N on Source Reference N struction, Modification	lumber(s) lumber(s) , or Location Transfer	

15. Describe changes that have beer or operating permit application:	made to this equipment or c	pperation(s) since the last construction
New construction		
16. Commonto		
16. Comments		
Based upon information and belief forme	SIGNATURE	as the responsible person of the above
mentioned facility, certify that the inform	ation contained in this applicati	on is accurate and true to the best of my
knowledge. As specified in TCA Section 39		s made under penalty of perjury.
17. Signature (application must be signe	d before it will be processed) ally signed by Steven Siler	Date
	: 2019.06.25 14:01:47 -05'00'	6/25/2019
Signer's name (type or print)	Title	Phone number with area code
Steven Siler	coo	847-4204054





William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243 Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

											
Туре	or	print and sul							e. Submit with t <mark>i</mark>	he	APC 100.
					ENTIFICATION						
1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]											
Sterilization Services of Tennessee - SOS# 029-949											
2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)											
3. Unique Emiss EP1 - Scrubber St	ack	#1								oir	nt, like Stack #1)
4. Brief descript											
See attachment E vented to a dry b	3 - E ed i	O gas remov reactor. The o	ed from th output of t	ne c	hambers is ver dry bed reactor	ited to v	vet ed	t acid to EP	scrubber whose 1 - Scrubber Stad	o ck	utput is further #1
5. Emission poir	ıt	Latitude			Longitude		T	6. Dis	stance to neare	st	property line (Ft.)
location		35 deg, 02 m	in, 04 sec		89 deg, 55 min	, 09 sec	- 1				oximately 200 ft
				STA	CK AND EMISS	SION D	AT,	A			
7. Stack or	,	eight above g	rade	Di	ameter (Ft.)	Temp	emperati		ature % of time		Direction of exit (Up,
emission	(F1	t.)		0.5	0.5 (°F)				over 125°F		down or horizontal)
point data: →	75					75			0	ί	Jp
Data at exit	Flo	ow (actual Ft.	³/Min.)	Ve	/elocity (Ft. /Sec.) M			Moisture (Grains/Ft. ³)			Moisture (Percent)
conditions: →		0 expected		15	0 expected		n	ot yet	known		not yet known
Data at		ow (Dry std. F	t. ³ /Min.)	Ve	locity (Ft. /Sec.)		N	∕loistu	re (Grains/Ft. ³)		Moisture (Percent)
standard conditions:	150	0 expected		150	expected		n	ot yet	known		not yet known
- >											
8. Monitoring de				ımı							
Opacity		O ₂	NO _x		Strip	Electr			Other (specif	-	No monitor
monitor		<u>oni</u> tor	monitor		c <u>hart</u>	data l		_	in comments		(none)
9. Control devic	e.	Description o	f propose	d m	onitoring, reco	rdkeep	ing	g, and	reporting to ass	ur	re compliance with
emission limit	s. Ir	iclude operat	ing param	iete	rs of control de	evice (fl	ow	rate,	temperature, pr	es	ssure drop, etc.).
glycol concentration											
scrubbing liquor le	vel										
oH :ower temperature	2										
eactor tank temp		ure									
dry bed temperatu		· · · -									
·											

instructions to	or more detail	S)						
Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen- tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi- ciency %
Particulate matter (PM)			**					
Sulfur dioxide (SO ₂)			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO _x)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO ₂ equivalents)								
Hazardous air pollutant (specify) ethylene oxide	0.01	0.03		0.04	0.12	2	002	99+
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)		WTT-00-00-00-00-00-00-00-00-00-00-00-00-0			· · · · · · · · · · · · · · · · · · ·			
Other (specify)								
Other (specify)								
Other (specify)								

Δ	PΩ	1	Λ	•

Signer's name (type or print)	Title	Phone number with area code
12. Signature		Date 6/4/2019
Based upon information and belief formed mentioned facility, certify that the informat knowledge. As specified in TCA Section 39-	tion contained in this applicat	ion is accurate and true to the best of my s made under penalty of perjury.
Date this form regardless of whether a signature is rec	nature is provided. If this forr quired.	n a signature is not required on this form. n is NOT being submitted at the same time
	SIGNATURE	
11. Comments		

- Refer to the tables in the instructions for estimation method and control device codes.
- ** Exit gas particulate matter concentration units: Process Grains/Dry Standard Ft³ (70^oF), Wood fired boilers Grains/Dry Standard Ft³ (70^oF), all other boilers Lbs. /Million BTU heat input.
- *** Exit gas sulfur dioxide concentrations units: Process PPM by volume, dry bases, and boilers Lbs. /Million BTU heat input





William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243 Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

		···									
Ty	/pe or	print and s	ubmit for e	ach	stack or air cor	ntamina	nt sou	ırce	e. Submit with th	ıe ،	APC 100.
	GENERAL IDENTIFICATION AND DESCRIPTION										
1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]											
Sterilization Services of Tennessee - SOS# 029-949											
2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)											
EP2- Dry Bed R	Reacto	r Stack #2							this emission po	oin	t, like Stack #1)
4. Brief descr	iptio	n of air con	taminant s	ou	rce (Attach a di	agram i	fappr	орі	riate):		
See attachmer vented to a dry	nt B - I y bed	EO gas remo	oved from the output of the ou	ne c the	chambers is ver dry bed reactor	ited to v	vet ac ed to l	id s EP1	scrubber whose 1 - Scrubber Stac	ou k#	itput is further #1
5. Emission p	oint	Latitude			Longitude	***************************************	6.	Dis	tance to neare	st	property line (Ft.)
location		35 deg, 02	min, 04 sec		89 deg, 55 min	, 09 sec			t known but app		- · ·
				STA	ACK AND EMISS	SION D	ATA				
7. Stack or		eight above	grade	D	iameter (Ft.)	Temp	eratur	e	% of time	D	irection of exit (Up,
emission		t.)		0.5	5	(°F)			over 125°F		own or horizontal)
point data: →	/_					120		0		Up	
Data at exit	F	ow (actual F	t.³/Min.)	Ve	elocity (Ft. /Sec.)	I	Moisture (Grains/Ft.3)				Moisture (Percent)
conditions: →		00 expected		40	expected		not yet known			1	not yet known
Data at	ı	ow (Dry std.	· .	Ve	elocity (Ft. /Sec.)		Mois	stur	re (Grains/Ft. ³)	T	Moisture (Percent)
standard conditions:	20	00 expected	t t	40	expected		not y	et l	known	- 1	not yet known
- conditions.											
	devic	e and reco	rding instr	um	ent (check all	that ap	ply):		WARRANT TO THE PARTY OF THE PAR		
Opacity	S	O ₂	NO_X		Strip	Electro			Other (specify	у	No monitor
monitor	n	<u>ioni</u> tor	monitor		chart	da <u>ta k</u>	ggger		in co <u>mm</u> ents)	(no <u>ne)</u>
						<u> </u>					✓
9. Control de	vice.	Description	of propose	d m	nonitoring, reco	rdkeepi	ng, ar	nd r	reporting to assu	ıre	compliance with
61111221011 1111	mus. II	nciude oper	ating paran	net€	ers of control de	evice (flo	ow rat	e, t	emperature, pre	ess	sure drop, etc.).
dry bed temper	ature										
ary bed temper	acar c										<u> </u>
											ļ.

instructions for	or more detail	s)						
Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen- tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi- ciency %
Particulate matter (PM)			**					
Sulfur dioxide (SO ₂)			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO _x)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO ₂ equivalents)								
Hazardous air pollutant (specify) ethylene oxide	0.005	0.015		0.02	0.06	2	051	99
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)				M-84944140-1-1-1				
Other (specify)								
Other (specify)								

Α	P	\sim	1	Λ	1

11. Comments		
	•	
	SIGNATURE	
If this form is being submitted at the same		•
Date this form regardless of whether a sigr	•	is NOT being submitted at the same time
as an APC 100 form, then a signature is rec	· · · · · · · · · · · · · · · · · · ·	
Based upon information and belief formed		•
mentioned facility, certify that the informat	7 -	**************************************
knowledge. As specified in TCA Section 39-	16-702(a)(4), this declaration is	s made under penalty of perjury.
12. Signature		Date
		6/4/2019
Signer's name (type or print)	Title	Phone number with area code
* Defer to the tables in the instructions f	or ectimation method and col	atrol device codes

- Refer to the tables in the instructions for estimation method and control device codes.
- Exit gas particulate matter concentration units: Process Grains/Dry Standard Ft³ (70⁰F), Wood fired boilers -Grains/Dry Standard Ft³ (70^oF), all other boilers – Lbs. /Million BTU heat input.
- Exit gas sulfur dioxide concentrations units: Process PPM by volume, dry bases, and boilers Lbs. /Million BTU heat input



APC 101

William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243 Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

<u> </u>			·								
Туре	Type or print and submit for each stack or air contaminant source. Submit with the APC 100.										
GENERAL IDENTIFICATION AND DESCRIPTION											
1. Organization's legal name and SOS control number [as registered with the TN Secretary of State (SOS)]											
Sterilization Services of Tennessee - SOS# 029-949											
2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)											
3. Unique Emiss EP3 - Dry Bed Rea	acto	r Stack #3							oin	t, like Stack #1)	
4. Brief descript											
See attachment E vented to a dry b	3 - E ed i	O gas remove eactor. The c	ed from thoutput of t	ne c	hambers is ven dry bed reactor	ted to v	vet acid ed to EF	scrubber whose 1 - Scrubber Stac	ou sk#	tput is further #1	
5. Emission poir	1t	Latitude			Longitude		6. Di	stance to neare	st	property line (Ft.)	
location		35 deg, 02 m	in, 04 sec		89 deg, 55 min	, 09 sec	1	et known but app			
				STA	CK AND EMISS	ION D	ΙTΑ				
7. Stack or	1	eight above g	rade	Di	ameter (Ft.)	Tempe	erature	% of time	D	irection of exit (Up,	
emission	(Ft.)			0.5 (°F)		(°F)		over 125°F		down or horizontal)	
point data: →	75					120		0		Up	
Data at exit	Flo	ow (actual Ft. ⁵	/Min.)	Ve	locity (Ft. /Sec.)	Moisture (Grains/Ft. ³)			T	Moisture (Percent)	
conditions: →		00 expected		40	expected		not yet known			not yet known	
Data at	Flo	w (Dry std. F	t. ³ /Min.)	Ve	locity (Ft. /Sec.)		MoistL	ıre (Grains/Ft. ³)	T	Moisture (Percent)	
standard	200	00 expected		40	expected		not yet	known		not yet known	
conditions: →			francis								
8. Monitoring de	vic	e and record	ing instri	ımı	ent (check all t	hat ap	ply):		L_		
Opacity		D_2	NO_X		Strip	Electro	-	Other (specif	у	No monitor	
monitor	m	<u>oni</u> tor	monitor		chart	da <u>ta k</u>	gger	in comments)	(none)	
9. Control devic	e.	Description o	f propose	d m	onitoring, reco	rdkeepi	ng. and	reporting to assi	ure	compliance with	
emission limit	s. Ir	ıclude operat	ing param	iete	ers of control de	vice (flo	w rate,	temperature, pre	ess	ure drop, etc.).	
										1.	
lry bed temperatu	ıre										
										Í	

Air contaminants Average Emissions Emissions Concenter Emissions Concenter Charles	mad actions to	n more detail	131	- 					
CPM Sulfur dioxide	Air contaminants	Emissions	Emissions	1	Emissions	Emissions	Estimation Method	Devices	Effi-
(SO ₂)				**					
CCO Volatile organic compounds (VOC) PPM	1			***					
compounds (VOC) PPM	(CO)			РРМ					
NO _X NO _X	compounds (VOC)			PPM					
CHF Hydrogen chloride (HCI) Hydrogen	(NO _x)			PPM					
(HCI) Lead (Pb) Greenhouse gases (CO2 equivalents) 0.005 Hazardous air pollutant (specify) ethylene oxide Hazardous air pollutant (specify) 0.005 Other (specify) 0.005 Other (specify) 0.006 2 051 99 4 0.006 2 051 99 4 0.006 2 051 99 0.006 2 0.007 0.006 0.008 2 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.009 0.006 0.00	(HF)								
Greenhouse gases (CO2 equivalents) Hazardous air pollutant (specify) ethylene oxide Hazardous air pollutant (specify) Cother (specify) Other (specify) Other (specify) Other (specify)									
CO2 equivalents	Lead (Pb)								
pollutant (specify) ethylene oxide Hazardous air pollutant (specify) Hazardous air pollutant (specify) Hazardous air pollutant (specify) Hazardous air pollutant (specify) Other (specify) Other (specify) Other (specify) Other (specify)									
pollutant (specify) Hazardous air pollutant (specify) Hazardous air pollutant (specify) Hazardous air pollutant (specify) Other (specify) Other (specify) Other (specify)	pollutant (specify)	0.005	0.015		0.02	0.06	2	051	99
pollutant (specify) Hazardous air pollutant (specify) Hazardous air pollutant (specify) Other (specify) Other (specify) Other (specify) Other (specify)	1								
pollutant (specify) Hazardous air pollutant (specify) Other (specify) Other (specify) Other (specify)									TO THE PARTY OF TH
pollutant (specify) Other (specify) Other (specify) Other (specify) Other (specify)									
Other (specify) Other (specify)				7.1.414444					
Other (specify)	Other (specify)								
Other (specify)			7200000000						
	Other (specify)								THE STATE OF THE S

	ADC 101
11. Comments	APC 101
	SIGNATURE
If this form is being submitted at the sam	ne time as an APC 100 form, then a signature is not required on this form.
Date this form regardless of whether a si	gnature is provided. If this form is NOT being submitted at the same time
as an APC 100 form, then a signature is r	equired.
Based upon information and belief forme	ed after a reasonable inquiry, I, as the responsible person of the above
mentioned facility, certify that the inform	ation contained in this application is accurate and true to the best of my
	9-16-702(a)(4), this declaration is made under penalty of perjury.
12. Signature	Date

Refer to the tables in the instructions for estimation method and control device codes.

Title

** Exit gas particulate matter concentration units: Process – Grains/Dry Standard Ft³ (70°F), Wood fired boilers – Grains/Dry Standard Ft³ (70°F), all other boilers – Lbs. /Million BTU heat input.

6/4/2019

Phone number with area code

*** Exit gas sulfur dioxide concentrations units: Process – PPM by volume, dry bases, and boilers – Lbs. /Million BTU heat input

Signer's name (type or print)



APC 101

William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243 Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

Туре	or	print and sub	omit for ea	ıch	stack or air con	taminar	nt s	source	e. Submit v	with the	e APC 100.	
	GENERAL IDENTIFICATION AND DESCRIPTION											
1. Organization	's le	egal name a	nd SOS co	ntr	ol number [as	register	ed	l with	the TN Sec	cretary	of State (SO:	5)]
Sterilization Servi	ces	of Tennesse	e - SOS# 0	29-	949							
2. Unique Sourc	e II	o (name/num	nber/letter	wh	ich uniquely ide	entifies	thi	is air c	ontamina	nt sour	ce, like Boile	r #1)
3. Unique Emiss EP4- Dry Bed Read			ime/numb	er/	letter which uni	iquely ic	der	ntifies	this emiss	sion po	int, like Stack	(#1)
4. Brief descript	.ion	of air conta	ıminant s	our	r ce (Attach a dia	gram if	fap	pprop	riate):			
See attachment B vented to a dry be		•									•	her
5. Emission poin	ıt	Latitude			Longitude		T	6. Dis	tance to	neares	t property l	ine (Ft.)
location		35 deg, 02 m	າin, 04 sec		89 deg, 55 min	, 09 sec	: r	not ye	t known b	ut appi	roximately 2	00 ft
				STA	ACK AND EMISS	ION D/	AT/	A				
7. Stack or		eight above g	rade	Di	iameter (Ft.)	Tempe	era	ature	i i		Direction of	
emission	(F1	t.)	ļ	0.5	0.5		ove		over 125°F		down or ho	rizontal)
point data: →	75		<u> </u>			120	,	0			Up	
Data at exit	Flo	ow (actual Ft.	³ /Min.)	Ve	Velocity (Ft. /Sec.)			Moisture (Grains/Ft. ³)			Moisture ((Percent)
conditions: →		00 expected						not yet known			not yet kne	*****
Data at	Į	ow (Dry std. F	t. ³ /Min.)	Velocity (Ft. /Sec.)			1	Moisture (Grains/Ft. ³)			Moisture (
standard conditions: →	20	00 expected		40 expected r			n	not yet known			not yet kno	own
8. Monitoring de	:vic	e and recor	ding instr	um	ent (check all	that ap	ply	y):				
Opacity		5O ₂	NO_X		Strip	Electr					•	
m <u>onit</u> or	m	nonitor	monitor		chart	dat <u>a l</u>	gg	ger	in com	ments)) (none) ✓	
9. Control device. Description of proposed monitoring, recordkeeping, and reporting to assure compliance with emission limits. Include operating parameters of control device (flow rate, temperature, pressure drop, etc.).												
dry bed temperati	ure											

instructions fo	or more detai	s)						
Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen- tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices	Control Effi- ciency %
Particulate matter (PM)			**					
Sulfur dioxide (SO₂)			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO _x)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO₂ equivalents)								
Hazardous air pollutant (specify) ethylene oxide	0.001	0.003		0.004	0.012	2	051	99
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)						***************************************		
Other (specify)								
Other (specify)				Parameter in the second se				
Other (specify)								

Α	Ð	^	1	n	4
~		•		ŧ١	

11. Comments		7,70,70
	SIGNATURE	
If this form is being submitted at the same	time as an APC 100 form, the	en a signature is not required on this form.
Date this form regardless of whether a sig	nature is provided. If this form	m is NOT being submitted at the same time
as an APC 100 form, then a signature is re		
Based upon information and belief formed	d after a reasonable inquiry, I,	as the responsible person of the above
mentioned facility, certify that the informa	tion contained in this applicat	ion is accurate and true to the best of my
knowledge. As specified in TCA Section 39-	16-702(a)(4), this declaration i	s made under penalty of perjury.
12. Signature		Date
		6/4/2019
Signer's name (type or print)	Title	Phone number with area code
Refer to the tables in the instructions	for estimation method and co	ntrol device codes

- instructions for estimation method and control device codes.
- Exit gas particulate matter concentration units: Process Grains/Dry Standard Ft³ (70°F), Wood fired boilers Grains/Dry Standard Ft³ (70°F), all other boilers Lbs. /Million BTU heat input.

 Exit gas sulfur dioxide concentrations units: Process PPM by volume, dry bases, and boilers Lbs. /Million
- BTU heat input





William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 15th Floor, Nashville, TN 37243 Telephone: (615) 532-0554, Email: Air.Pollution.Control@TN.gov

Туре	or print and su	ıbmit for ea	ich stack or air con	itaminan	t sourc	e. Submit with th	ie APC 100.		
		GENERA	LIDENTIFICATION	AND D	ESCRIP	TION			
1. Organization	's legal name a	and SOS co	ntrol number [as	register	ed with	the TN Secretary	of State (SOS)]		
Sterilization Servi	ces of Tenness	ee - SOS# 0	29-949						
2. Unique Sourc	2. Unique Source ID (name/number/letter which uniquely identifies this air contaminant source, like Boiler #1)								
3. Unique Emission Point ID (name/number/letter which uniquely identifies this emission point, like Stack #1) EP5 - Oxidizer Stack #4									
4. Brief descript	tion of air cont	aminant s	ource (Attach a dia	agram if	approp	riate):			
	-		ne chambers is ven he dry bed reactor						
5. Emission poir	ıt Latitude		Longitude		6. Di	stance to neare	st property line (Ft.)		
location	35 deg, 02 i	min, 04 sec	89 deg, 55 min	, 09 sec	not ye	et known but app	proximately 200 ft		
			STACK AND EMISS	SION DA	TA				
7. Stack or	Height above	grade	Diameter (Ft.)	Tempe	rature	% of time	Direction of exit (Up,		
emission	(Ft.)		2.5 (°F)			over 125°F	down or horizontal)		
point data: →	45	:	240			100	Up		
Data at exit	Flow (actual Fi	t.³/Min.)	Velocity (Ft. /Sec.)		MoistL	ıre (Grains/Ft. ³)	Moisture (Percent)		
conditions: →	8000 expected					known	not yet known		
Data at	Flow (Dry std.	Ft. ³ /Min.)	Velocity (Ft. /Sec.)	.) Moisture (Grains/Ft. ³)			Moisture (Percent)		
standard conditions:	8000 expected		35 expected	not yet	known	not yet known			
8. Monitoring de	vice and reco	rding instri	ument (check all	that api	olv):				
Opacity	SO ₂	NOx	Strip	Electro	_	Other (specif	fy No monitor		
monitor	monitor	monitor	chart	dat <u>a lo</u>	gger	in comments	(none)		
	s. Include opera						ure compliance with essure drop, etc.).		

APC 101

IIISCI UCCIONS TOI	more detail	3)	· · · · · · · · · · · · · · · · · · ·	•				
Air contaminants	Average Emissions (Lbs./Hr.)	Maximum Emissions (Lbs./Hr.)	Concen- tration	Average Emissions (Ton/Yr.)	Potential Emissions (Ton/Yr.)	Emissions Estimation Method Code *	Control Devices *	Control Effi- ciency %
Particulate matter (PM)			**					
Sulfur dioxide (SO₂)			***					
Carbon monoxide (CO)			PPM					
Volatile organic compounds (VOC)			PPM					
Nitrogen oxides (NO _x)			PPM					
Hydrogen fluoride (HF)								
Hydrogen chloride (HCl)								
Lead (Pb)								
Greenhouse gases (CO ₂ equivalents)								
Hazardous air pollutant (specify) ethylene oxide	0.04	0.04		0.18	0.36	2	019 or 039 ?	99
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Hazardous air pollutant (specify)								
Other (specify)								
Other (specify)								
Other (specify)	V=0.00000000000000000000000000000000000							
Other (specify)								

11. Comments		
	SIGNATURE	
If this form is being submitted at the same	time as an APC 100 form, the	n a signature is not required on this form.
Date this form regardless of whether a sign	nature is provided. If this form	is NOT being submitted at the same time
as an APC 100 form, then a signature is rec		
Based upon information and belief formed	after a reasonable inquiry, I, a	as the responsible person of the above
mentioned facility, certify that the informal	tion contained in this applicati	on is accurate and true to the best of my
knowledge. As specified in TCA Section 39-	16-702(a)(4), this declaration is	made under penalty of perjury.
12. Signature		Date
		6/4/2019
Signer's name (type or print)	Title	Phone number with area code
Pefer to the tables in the instructions f	or actionation make a decider	

- Refer to the tables in the instructions for estimation method and control device codes.
- ** Exit gas particulate matter concentration units: Process Grains/Dry Standard Ft³ (70⁰F), Wood fired boilers Grains/Dry Standard Ft³ (70⁰F), all other boilers Lbs. /Million BTU heat input.
- *** Exit gas sulfur dioxide concentrations units: Process PPM by volume, dry bases, and boilers Lbs. /Million BTU heat input

Attachment A

Ethylene Oxide Gas Sterilization Process Description

The gas sterilization process introduces Ethylene Oxide (EtO) gas, under vacuum, into a sealed chamber that contains packaged products to be sterilized. The products are typically pre-humidified, generally at elevated temperatures, prior to the introduction of EtO into the evacuated chamber. The products to be sterilized are enclosed in gas permeable packaging and are exposed to the EtO for controlled periods of time that are known to destroy any biological contaminants that may have become part of the product or product packaging. A graphical depiction indicating the flow of EtO in a typical gas sterilization process is shown below in Figure 1. Arrows indicate the flow or movement of EtO through the process. The numbers refer to the descriptive content on the following pages.

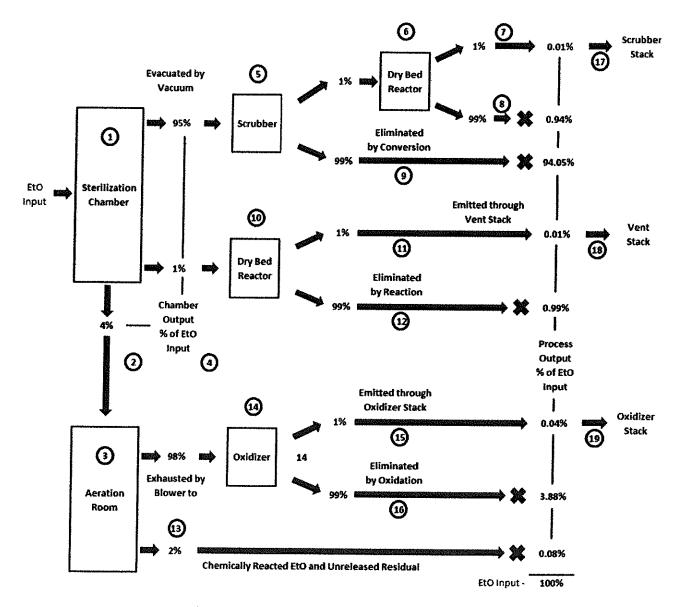


Figure 1 - Ethylene Oxide Gas Sterilization Process

EtO Sterilization

- Product to be sterilized is loaded into the sterilization chamber. The chamber is evacuated and EtO is introduced into the chamber. Some of the EtO is absorbed by the product or packaging. Most of the EtO is continuously recirculated in the chamber open space. By the end of the sterilization process most of the EtO has been evacuated from the chamber.
- 2. After the sterilization process is completed, product is removed from the sterilization chamber and transported to aeration rooms.
- 3. In the aeration room, air is continuously recirculated around the product as it continues to outgas absorbed EtO.
- 4. Experience indicates that typically no more than 4% of the EtO used is carried with the sterilized product into the aeration room. Typically, at least 95% of the EtO used is evacuated from the chamber to a scrubber during the sterilization process. The rest of the EtO used, typically no more than 1%, remains in the chamber and is vented through a dry bed reactor.

EtO Scrubbing

- 5. Ethylene Oxide gas that is evacuated from the chamber is sent to a liquid scrubber. The scrubber mixes the EtO with an acid/water solution. This converts the EtO gas to liquid Ethylene Glycol. The scrubbing process is designed to be at least 99% efficient in converting the EtO gas to Ethylene Glycol.
- 6. No more than 1% of the EtO gas processed by the scrubber is vented to a dry bed reactor.
- 7. No more than 1% of the EtO gas vented to the dry bed reactor is emitted to the atmosphere through the scrubber stack.
- 8. At least 99% of the EtO gas vented to the dry bed reactor is eliminated through a reaction that converts the gas to a disposable polymer
- 9. At least 99% of the EtO gas processed by the scrubber is eliminated through conversion to Ethylene Glycol.

EtO Ventilation

- 10. The relatively small amount of EtO left in the chamber after sterilization, already stated as typically not more than 1%, is vented to a dry bed reactor.
- 11. No more than 1% of the EtO processed by the dry bed reactor is emitted to the atmosphere through the vent stack.
- 12. At least 99% of the EtO gas processed by the dry bed reactor is eliminated through a reaction that converts the gas to a disposable polymer.

EtO Oxidation

13. Product outgassing of EtO continues in the aeration room. Air is continuously recirculated around the sterilized product. A portion of the recirculating air, containing outgassed EtO, is continuously removed from the aeration room by exhaust blowers. Studies and experience suggest that about 98% of the residual EtO carried in the product and packaging is released during the aeration process and is processed by an oxidizer. Typically, this results in less than 2% remaining in the sterilized product as chemically reacted or unreleased residual EtO.

- 14. Ethylene oxide gas that is exhausted from the aeration room is vented to a thermal oxidizer. The thermal oxidizer is designed to be at least 99% efficient in eliminating EtO gas through combustion.
- 15. No more than 1% of the EtO gas processed by the oxidizer is emitted to the atmosphere through the oxidizer stack.
- 16. At least 99% of the EtO gas processed by the oxidizer is eliminated through the oxidation process.

EtO Emissions

- 17. Typically, about 0.95% of the EtO used by the process is emitted through the Scrubber Stack. This is calculated as no more than 1% (after scrubbing) of 95% (after sterilizing) of the EtO used in the sterilization process.
- 18. Typically, about 0.01% of the EtO used by the process is emitted through the Vent Stack. This is calculated as no more than 1% (after reaction) of 1% (after sterilizing) of the EtO gas used in the sterilizing process.
- 19. Typically, about 0.04% of the EtO used by the process is emitted through the Oxidizer Stack. This is calculated as no more than 1% (after oxidizing) of 98% (after aeration) of 4% (after sterilization) of the EtO used in the sterilization process.

